06- DEPARTMENT OF ENVIRONMENTAL PROTECTION

096 BUREAU OF AIR QUALITY CONTROL

CHAPTER 130: SOLVENT DEGREASERS

Summary: This regulation establishes consistent requirements for testing, evaluating and limiting volatile organic compound (VOC) emissions from solvent degreasers, and sets minimum requirements for equipment and operation standards in order to reduce VOC emissions.

1. Scope/Applicability

A. This regulation shall apply to all new and existing solvent degreasers including cold cleaning degreasers, open-top vapor degreasers and conveyorized degreasers. Solvent degreasers as described below that are subject to this Chapter are exempt from the following control technology:

1. Any open-top vapor degreaser with an open area smaller than one (1) square meter (m^2) (10.8 square feet (ft^2)) or any conveyorized degreaser with an air/solvent interface smaller than two (2) m^2 (21.5 ft^2) shall be exempt from the requirements for refrigerated chiller or carbon adsorption control technologies; or

2. Any conveyorized degreaser with air/solvent interface smaller than two (2) m^2 (21.5 ft^2) is exempt from the control requirements of Subsection 3(C)(1)(d) of this Chapter.

The equipment and operation standards of Section 3 of this Chapter do not apply to the solvent metal cleaning process defined below as wipe cleaning.

B. All owners of solvent degreasers shall comply with the equipment standards of Section 3, the test methods in Section 5, initial compliance certification in Section 6 and the reporting requirements in Section 7 of this Chapter. All owners of solvent degreasers that require a control device or other equipment that must be maintained and inspected to operate properly including, but not limited to, safety switches, shall comply with the recordkeeping and reporting requirements in Sections 6 and 7 of this Chapter, including the Reporting of Control Device Failure. All owners or operators of a solvent metal cleaning facility shall comply with the operation standards of Section 3 of this Chapter. All owners or operators of either a solvent degreaser or a solvent metal cleaning facility shall comply with the standards in Section 4 of this Chapter for the handling, storage and disposal of materials containing VOC.

2. Definitions

A. Air/solvent interface. "Air/solvent interface" means the surface area defined by points of contact between the solvent liquid or vapor in the solvent degreaser and the surrounding air.

B. Baffle. "Baffle" mean a vertical sheet of material placed along the top of the solvent degreaser to shield the solvent degreaser from drafts.

C. Cold cleaning degreaser. "Cold cleaning degreaser" means an apparatus used to clean and remove soil from a metal surface through a batch process by spraying, brushing, flushing, or immersion while maintaining the solvent below its boiling point.

D. Control device. "Control device" means equipment used to reduce, by destruction or removal, the amount of air pollutant(s) in an air stream prior to discharge to the ambient air.

E. Conveyorized degreaser. "Conveyorized degreaser" means an apparatus used to clean and remove soil from a continuous stream of metal parts using either cold or vaporized solvents.

F. Freeboard height. "Freeboard height" means, for a cold cleaner, the distance from the liquid solvent level in the cold cleaning degreaser tank to the lip of the tank. For an open-top vapor degreaser, it is the distance from the vapor level in the tank during idling to the lip of the tank. For a conveyorized degreaser using vaporized solvents, it is the distance from the vapor level to the bottom of the entrance or exit opening, whichever is lower. For a conveyorized degreaser using cold solvents, it is the distance from the liquid solvent level to the bottom of the entrance or exit opening, whichever is lower.

G. Freeboard ratio. "Freeboard ratio" means the freeboard height divided by the smaller interior dimension (length, width, or diameter) of the solvent degreaser tank.

H. Open-top vapor degreaser. "Open-top vapor degreaser" means an apparatus using condensation of hot solvent vapor to clean and remove soil from a batch of metal parts.

I. Refrigerated chiller. "Refrigerated chiller" means a control device mounted above both the water jacket and the primary condensor coils, consisting of secondary coils, which carry a refrigerant that provides a chilled air blanket above the solvent vapor, thereby reducing VOC emissions from the solvent degreaser bath.

J. Solvent degreaser. "Solvent degreaser" means cold cleaning degreaser, open-top vapor degreaser or conveyorized degreaser.

K. Solvent metal cleaning."Solvent metal cleaning" means the process of cleaning soil from metal surfaces by cold cleaning, open-top vapor degreasing, or conveyorized degreasing.

L. Wipe cleaning. "Wipe cleaning" means the removal of residue or contaminants from surfaces by rubbing surfaces with rags or disposable wipers.

3. Equipment and Operation Standards

A. Cold cleaning degreasers

1. Equipment standards

The owner of a cold cleaning degreaser shall comply with the following applicable equipment specifications:

a. Equip the cold cleaning degreaser with a cover that is easily operated with one hand if:

i. The solvent true vapor pressure is greater than two (2) kiloPascals (kPa) (fifteen (15) millimeters of Mercury (mm Hg) or 0.3 pound per square inch (psi)) measured at 38 degrees Celsius (C) (100 degrees Fahrenheit (F)) by the American Society for Testing and Materials (ASTM) D323-89;

ii. The solvent is agitated; or

iii. The solvent is heated;

b. Equip the cleaner with an internal drainage basket so that parts are enclosed under the cover while draining if the solvent true vapor pressure is greater than 4.3 kPa (32 mm Hg or 0.6 psi) measured at 38 degrees C (100 degrees F) by ASTM D323-89, except that the drainage basket may be external for cold cleaning degreasers where an internal type cannot fit into the cold cleaning degreaser;

c. Attach or affix to each cold cleaning degreaser, a permanent conspicuous label summarizing the operation standards listed in paragraphs 3(A)(2)(a) through 3(A)(2)(f) of this Chapter; and

d. Implement one of the following control measures if the solvent true vapor pressure is greater than 4.3 kPa (32 mm Hg or 0.6 psi) measured at

38 degrees C (100 degrees F) by ASTM D323-89, or if the solvent is heated above fifty (50) degrees C (120 degrees F):

i. Freeboard height that gives a freeboard ratio greater than or equal to 0.7;

ii. Water cover at least 2.54 centimeters (cm) (one (1) inch (in)) in depth (solvent shall be insoluble in and heavier than water); or

iii. Another system of equivalent control, such as a refrigerated chiller or a carbon adsorber, approved by the Department and the Environmental Protection Agency (EPA).

2. Operation standards

The owner or operator of a solvent metal cleaning facility that uses cold cleaning degreasers shall comply with the following operation standards:

a. Close the cover whenever parts are not being handled in the cold cleaning degreaser;

b. Drain the cleaned parts for at least fifteen (15) seconds (sec) or until dripping ceases;

c. If used, supply a solvent spray that is a solid fluid stream (not a fine, atomized, or shower-type spray) at a pressure that does not exceed ten (10) pounds per square inch gauge (psig);

d. Do not degrease porous or absorbent materials, such as cloth, leather, wood or rope;

e. Minimize the drafts across the top of each cold cleaning degreaser such that whenever the cover is open, the cold cleaning degreaser is not exposed to drafts greater than forty (40) meters per minute (m/min) (131.2 feet per minute (ft/min)), as measured between one (1) and two (2) meters (m) (3.28 and 6.56 feet (ft)) upwind, and at the same elevation as the tank lip; and

f. Do not operate the cold cleaning degreaser upon the occurrence of any visible solvent leak until such leak is repaired.

B. Open-top vapor degreasers

1. Equipment standards

The owner of an open-top vapor degreaser shall comply with the following applicable equipment specifications:

a. Equip the open-top vapor degreaser with a cover that can be opened and closed easily without disturbing the vapor zone. If the open-top vapor degreaser is equipped with a lip exhaust, the cover shall be located below the lip exhaust;

b. Equip the open-top vapor degreaser with a baffle on the windward side of the open-top vapor degreaser;

c. Provide the following safety switches:

i. A condenser flow switch and thermostat that shuts off the sump heat if the condenser coolant is either not circulating or if the vapor level rises above the height of the primary condenser; and

ii. A spray safety switch that shuts off the spray pump if the vapor level drops more than ten (10) cm (four (4) in) below the lowest condensing coil;

d. Attach or affix to each open-top vapor degreaser, a permanent conspicuous label summarizing the operation standards listed below in paragraphs 3(B)(2)(a) through 3(B)(2)(k) of this Chapter; and

e. Implement one of the following control measures:

i. Freeboard ratio greater than or equal to 0.75 and, if the open-top vapor degreaser opening is greater than one (1) m^2 (10.8 ft^2), a powered (motorized) cover;

ii. Refrigerated chiller with a chilled air blanket temperature no greater than thirty (30)% of the solvent's boiling point in degrees F measured at the centroid of the open-top vapor degreaser at the coldest point;

iii. Enclosed design (cover or door opens only when the dry part to be cleaned is actually entering or exiting the open-top vapor degreaser);

iv. Carbon adsorption system, with ventilation greater than or equal to fifteen (15) cubic meters per minute per square meter ($m^3/min/m^2$) (fifty (50) cubic feet per minute per square foot (cfm/ft^2)) of air/solvent interface (when cover is open), and exhausting less than 25 parts per million (ppm) of solvent averaged over one complete adsorption cycle, or 24 hours, whichever is less; or

v. A control system, such as a thermal or catalytic incinerator, demonstrated to have a control efficiency equivalent to or greater than the control measures listed in paragraphs i, ii, iii and iv above and approved by the Department and the EPA.

2. Operation standards

The owner or operator of a metal solvent cleaning facility that uses open-top vapor degreasers shall comply with the following operation standards:

a. Keep the cover closed at all times except when processing work loads through the open-top vapor degreaser;

b. Minimize solvent carry-out by:

i. Racking parts so that solvent drains freely and is not trapped;

ii. Moving parts in and out of the open-top vapor degreaser at less than 3.3 m/min (eleven (11) ft/min);

iii. Holding the parts in the vapor zone at least thirty (30) sec or until condensation ceases, whichever is longer;

iv. Tipping out any pools of solvent on the cleaned parts before removal from the vapor zone; and

v. Allowing parts to dry within the open-top vapor degreaser for at least fifteen (15) seconds or until visually dry, whichever is longer;

c. Do not degrease porous or absorbent materials, such as cloth, leather, wood, or rope;

d. Occupy no more than one-half of the open-top vapor degreaser's open-top area with a workload;

e. Do not allow the vapor level to drop more than ten (10) cm (four (4) in) below the lowest condensing coil;

f. Always spray within the vapor zone;

g. Repair solvent leaks immediately, or shut down the open-top vapor degreaser;

h. Operate the open-top vapor degreaser such that water cannot be visually detected in solvent exiting the water separator;

i. Use no workplace fans near the open-top vapor degreaser opening, and ensure that exhaust ventilation does not exceed twenty (20) $m^3/min/m^2$ (65 cfm/ft^2);

j. When the cover is open, ensure that the open-top vapor degreaser is not exposed to drafts greater than forty (40) m/min (131 ft/min), as measured between one (1) and two (2) m upwind and at the same elevation as the tank lip; and

k. If a lip exhaust is used on the open top vapor degreaser, use a ventilation rate of no more than twenty (20) $m^3/min/m^2$ (65 cfm/ft^2) of the open-top vapor degreaser open area, unless a higher rate is necessary to meet Occupational Safety and Health Administration (OSHA) requirements.

C. Conveyorized degreasers

1. Equipment standards

The owner of a conveyorized degreaser shall comply with the following applicable equipment specifications:

a. Equip the conveyorized degreaser with equipment, such as a drying tunnel or rotating (tumbling) basket, sufficient to prevent cleaned parts from carrying out solvent liquid or vapor;

b. Provide downtime covers for closing off the entrance and exit at all times when the conveyors and exhausts are not being operated;

c. Provide the following safety switches:

i. A condenser flow switch and thermostat that shuts off the sump

heat if the condenser coolant is either not circulating or if the vapor level rises above the height of the primary condenser;

ii. A spray safety switch that shuts off the spray pump or the conveyorized degreaser if the vapor level drops more than ten (10) cm (four (4) in) below the lowest condensing coil; and

iii. vapor level control thermostat that shuts off the sump heat when the vapor level rises higher than the manufacturer's specifications; and

d. Install one of the following control devices:

i. Refrigerated chiller with a chilled air blanket temperature no greater than thirty (30)% of the solvent's boiling point in degrees F measured at the centroid of the conveyorized degreaser at the coldest point;

ii. Carbon adsorption system, with ventilation greater than or equal to fifteen (15) $m^3/min/m^2$ (fifty (50) cfm/ft^2) of air/solvent interface (when downtime covers are open), and exhausting less than 25 ppm of solvent by volume averaged over one complete adsorption cycle, or 24 hours, whichever is less; or

iii. A control system demonstrated to have a control efficiency equivalent to or greater than the control devices listed in paragraph (i) or (ii) above, and approved by the Department and the EPA.

2. Operation standards

The owner or operator of a conveyorized degreasing facility shall comply with the following operating standards:

a. Minimize openings during operation so that entrances and exits silhouette workloads with an average clearance between the parts and the edge of the conveyorized degreaser opening of less than ten (10) cm (four (4) in) or less than ten (10)% of the width of the opening;

b. Minimize carryout VOC emissions by:

i. Racking parts so that solvent drains freely from parts and is not trapped; and

ii. Maintaining the vertical conveyor speed at less than 3.3 m/min (eleven (11) ft/min);

c. Repair solvent leaks immediately, or shut down the conveyorized degreaser;

d. Operate the conveyorized degreaser such that water cannot be visually detected in solvent exiting the water separator;

e. Do not degrease porous or absorbent materials, such as cloth, leather, wood, or rope;

f. Use no workplace fans near the conveyorized degreaser opening, and ensure that exhaust ventilation does not exceed twenty (20) $m^3/min/m^2$ (65 cfm/ft^2); and

g. Place any installed downtime covers over entrances and exits of the conveyorized degreaser at all times when the conveyors and exhausts are not being operated.

4. Handling, Storage and Disposal of Materials Containing VOC.

This section applies to the owner or operator of any solvent metal cleaning facility or any solvent degreaser subject to this Chapter.

A. Vapor-tight containers shall be used for the storage of spent or fresh material containing VOC and for the storage or disposal of cloth or paper impregnated with VOC that are used for surface preparation, clean up or coating removal.

B. The use of materials containing VOC is prohibited for the cleanup of spray equipment unless equipment is used to collect the cleaning compounds and to minimize their evaporation to the atmosphere.

5. Test Methods.

The owner of any solvent degreaser subject to this Chapter shall, at his or her own expense, collect and record the applicable information, perform compliance testing, demonstrate compliance by using the methods and procedures described in this Chapter, and submit a report to the Department of the results. All tests shall be made with a thirty (30)-day advance notification to the Department.

Compliance with the equipment standards in Section 3 of this Chapter shall be determined by applying the following test methods, which are found at 40 CFR Part 60, Appendix A, or the ASTM methods, as appropriate:

A. Methods 1-4 for determining flow rates;

B. Method 18 for determining gaseous organic compound emissions by gas chromatography;

C. Method 25 for determining total gaseous nonmethane organic emissions as carbon, except in cases where the outlet VOC concentration of the control device is less than fifty (50) ppm as carbon, in which case Method 25A shall be used;

D. Method 25A or 25B for determining total gaseous organic concentrations using flame ionization or nondispersive infrared analysis; and

E. ASTM D323-89 for measuring solvent true vapor pressure.

6. Initial Compliance Certification and Recordkeeping Procedures.

Except for solvent degreasers that do not require a control device or other equipment that must be maintained and inspected to operate properly including, but not limited to, safety switches, the owner of all solvent degreasers subject to this Chapter shall establish and maintain all records necessary for determining compliance with the requirements for a period of six years. For solvent degreasers that do not require a control device or other equipment that must be maintained and inspected to operate properly including, but not limited to, safety switches, the owner or operator of the solvent degreaser or solvent metal cleaning facility shall maintain a monthly record of the amount of solvent added to each unit and keep such record for two years after such record is made.

The owner of any solvent degreaser subject to this Chapter shall further make required records and reports available for inspection during normal business hours and shall provide copies to the Department or EPA upon request.

A. Certification records

The owner of each solvent degreaser that requires a control device or other equipment that must be maintained and inspected to operate properly including, but not limited to, safety switches, shall maintain the following records:

1. A record on the maintenance of a control device, such as replacement of the carbon in a carbon adsorption unit, or records on the maintenance of other

equipment that must be maintained and inspected to operate properly including, but not limited to, safety switches; and

2. The results of all tests conducted in accordance with the requirements in Section 5, Test Methods, of this Chapter.

B. Initial compliance certification records

The owner of a solvent degreaser subject to this Chapter shall provide the following records for Initial Compliance Certification to the Department:

1. The initial compliance certification shall provide at a minimum the following information:

a. Name of the owner of the solvent degreaser and the name and location of the facility where the solvent degreaser is operated,

b. Address and telephone number of the person to contact for more information, and

c. Serial number or model number of each solvent degreaser(s); and

2. For each solvent degreaser, the initial compliance certification shall also include at a minimum:

a. The solvent true vapor pressure test result and identification of the applicable equipment standards. Owners of solvent degreasers may register with the Department the true vapor test results of a particular model which uses the same solvent. All solvent degreasers of the same model as those registered do not require individual vapor pressure testing;

b. The method of compliance used to measure flow rate or solvent true vapor pressure, and VOC concentration if a carbon adsorber is used;

c. For each solvent degreaser with a carbon adsorber subject to numerical emission limitations as specified in Subsections 3(B)(1)(e)(iv) and 3(C)(1)(d)(ii) of this Chapter, the estimated VOC emissions without control;

d. The type of control device(s) or system(s) in use, if applicable;

e. The design performance efficiency of the control device or system, if applicable;

f. For each solvent degreaser with a carbon adsorber subject to numerical emission limitations as specified in Subsections 3(B)(1)(e)(iv) and 3(C)(1)(d)(ii) of this Chapter, the estimated VOC emissions after control; and

g. Certification that each solvent degreaser at the facility is in compliance with the applicable equipment standards.

C. Testing and certification of control device or system

By May 31, 1995, or upon startup of a new solvent degreaser, or upon replacement of an existing solvent degreaser with one of a different model, or upon changing the control device used on an existing solvent degreaser, the owner of the solvent degreaser shall perform all tests and submit to the Department, results of all tests and calculations necessary to demonstrate that the solvent degreaser will be in compliance with the applicable equipment standards.

D. Recordkeeping

1. The owner of each solvent degreaser that requires a control device or other equipment that must be maintained and inspected to operate properly including, but not limited to, safety switches, shall maintain up-to-date, readily accessible continuous records of any equipment maintenance specified by the manufacturer of the control device or other equipment, as well as up-to-date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent performance test of the control device are exceeded. Periods of operation during which the parameter boundaries established during the most recent performance tests are exceeded are defined as follows:

a. For thermal incinerators, all continuous three (3)-hour periods of operation in which the average combustion temperature was more than 28 degrees C (50 degrees F) below the average combustion temperature during the most recent performance test that demonstrated that the control device was operating properly;

b. For catalytic incinerators, all continuous three (3)-hour periods of operation in which the average temperature of the process vent stream immediately before the catalyst bed is more than 28 degrees C (fifty (50) degrees F) below the average temperature of the process vent stream immediately before the catalyst bed during the most recent performance test that demonstrated that the control device was operating properly; or

c. For carbon adsorbers, all continuous three (3)-hour periods of operation

during which either the average VOC concentration or the reading of organics in the exhaust gases is more than twenty (20)% greater than the average exhaust gas concentration or reading measured by the organics monitoring device during the most recent determination of the recovery efficiency of the carbon adsorber that demonstrated that the control device was operating properly.

2. The owner of each solvent degreaser that requires a control device or other equipment that must be maintained and inspected to operate properly including, but not limited to, safety switches, shall maintain a log of operating time for the capture system, control device, monitoring equipment, and the solvent degreaser.

3. The owner of each solvent degreaser that requires a control device or other equipment that must be maintained and inspected to operate properly including, but not limited to, safety switches, shall maintain a maintenance log for the capture system, control device, and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages.

7. Reporting.

The owner of the solvent degreaser shall:

A. Initial compliance certification

By January 1, 1995, or upon startup of a new solvent degreaser, the owner of a solvent degreaser shall provide to the Department an initial compliance certification. Owners or operators of solvent degreasers which are still in operation six years after the date from which the initial compliance certification was provided to the Department shall provide an updated initial compliance certification to the Department within thirty (30) days of this occurrence.

B. Reports of control device failure

The owner of any solvent degreaser that requires a control device or of a solvent metal cleaning facility with a solvent degreaser that requires a control device shall maintain records of each occurrence of a control device malfunction, failure and downtime, and any other change in operation of the control system that would affect VOC emissions. The owner or operator of the solvent degreaser or metal solvent cleaning facility shall notify the Department and submit a written report within thirty (30) calendar days of becoming aware of such occasions. The report shall supply the following information:

1. The name and location of the solvent metal cleaning facility or business;

2. The serial number or other identification of the solvent degreaser that caused a change in the release of VOC emissions into the ambient air;

3. The time and date of the first observation of the change in VOC emissions;

4. The cause and expected duration of the change in VOC emissions;

5. For solvent degreaser with carbon adsorbers subject to the numerical emission limitations as specified in Subsections 3(B)(1)(e)(iv) and 3(C)(1)(d)(ii) of this Chapter, the estimated VOC emissions and the operating data and calculations used in determining the magnitude of the excess VOC emissions during equipment downtime; and

6. The proposed corrective actions and schedule to correct the conditions causing the change in VOC emissions in order to prevent recurrence.

8. Compliance Schedule.

The owner or operator of a solvent degreaser or solvent metal cleaning facility shall achieve final compliance with this regulation on or before May 31, 1995.

BASIS STATEMENT : In the State of Maine, nine counties are classified as nonattainment for the federal ozone air quality standard. Ground-level ozone formation is caused in part by solvent metal cleaning operations that emit volatile organic compounds (VOC).

This regulation of solvent degreasers minimizes VOC emissions through equipment and operation standards. Under Section 184 of the Clean Air Act Amendments of 1990, the State of Maine must submit plans to control VOC from all sources covered by a Control Technique Guideline (CTG) issued before November 15, 1990.

In addition to the Basis Statement above, the Department has filed with the Secretary of State its response to comments received during the comment period.

Authority: 38 MRSA Section 585-A

Effective Date: February 10, 1993